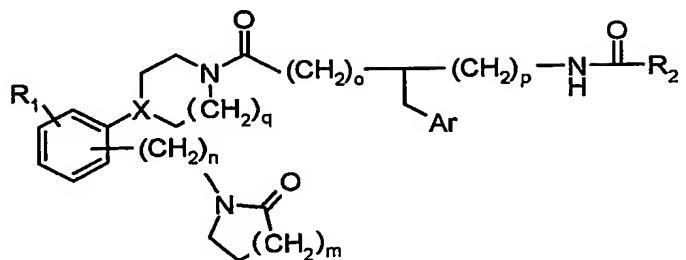


CLAIMS

1. A compound of structural formula (I):



(I)

or a pharmaceutically acceptable salt or solvate thereof, wherein

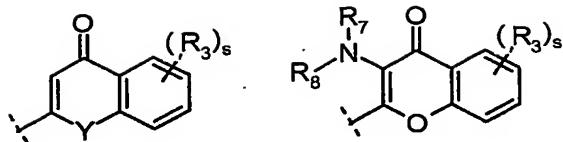
Ar is:

aryl or heteroaryl which may both be substituted or unsubstituted;

R<sub>1</sub> is independently:

- hydrogen,
- hydroxy,
- cyano,
- nitro,
- halo,
- alkyl,
- alkoxy or
- haloalkyl;

$R_2$  is:



each  $R_3$  is independently:

- hydrogen,
- halo,
- alkyl,
- haloalkyl,
- hydroxy,
- alkoxy,
- S-alkyl,
- SO<sub>2</sub>-alkyl,
- O-alkenyl,
- S-alkenyl,
- NR<sub>7</sub>C(O)R<sub>7</sub>,
- NR<sub>7</sub>SO<sub>2</sub>R<sub>7</sub>,
- N(R<sub>7</sub>)<sub>2</sub>
- (D)-cycloalkyl,
- (D)-aryl,
- (D)-heteroaryl or
- (D)-heterocyclyl (wherein heterocyclyl excludes a heterocyclyl containing a single nitrogen), and
- wherein aryl, heteroaryl, heterocyclyl, alkyl and/or cycloalkyl may be substituted or unsubstituted, and two adjacent R<sub>3</sub> may form a 4- to 7-membered ring;

$R_7$  and  $R_8$  are each independently:

- hydrogen,
- alkyl or
- cycloalkyl, or

R<sub>7</sub> and R<sub>8</sub> together with the nitrogen to which they are attached form a 5- to 8-membered ring,  
wherein alkyl and cycloalkyl are both unsubstituted or substituted;

D is a bond or alkyl;

X is CH or N;

Y is O or NR<sub>7</sub>;

n is 1 - 4;

m is 0 - 3;

o is 0 - 2;

p is 0 - 2;

q is 1 or 2;

s is 0 - 4.

2. The compound of claim 1, wherein

Ar is:

aryl which may be substituted with one to three substituents independently selected from the group consisting of cyano, nitro, perfluoroalkoxy, halo, alkyl, (D)-cycloalkyl, alkoxy and/or haloalkyl;

R<sub>1</sub> is independently:

hydrogen,

hydroxy,

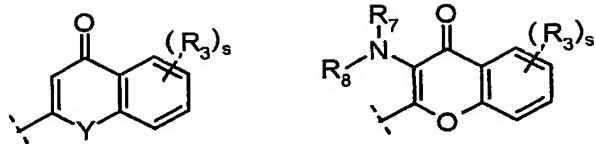
halo,

alkyl,

alkoxy or

haloalkyl;

$R_2$  is:



each  $R_3$  is independently:

- hydrogen,
- halo,
- alkyl,
- haloalkyl,
- hydroxy,
- alkoxy,
- S-alkyl or
- $SO_2$ -alkyl,
- O-alkenyl or
- S-alkenyl;

$R_7$  and  $R_8$  are each independently:

- hydrogen,
- alkyl or
- cycloalkyl, or

$R_7$  and  $R_8$  together with the nitrogen to which they are attached form a 5- to 7-membered ring optionally containing an additional heteroatom selected from O, S and  $NR_4$ ;

D is a bond or  $CH_2$ ;

X is CH or N;

Y is  $NR_7$  or O;

n is 1 or 2;

m is 1 - 3;

o is 0 or 1;

p is 0 or 1;

q is 1;

s is 1 - 3.

3. The compound of claim 1 or 2, wherein

Ar is:

phenyl or naphthyl which may be substituted with one or two substituents independently selected from the group consisting of perfluoroalkoxy, halo, alkyl, alkoxy and haloalkyl;

R<sub>1</sub> is independently:

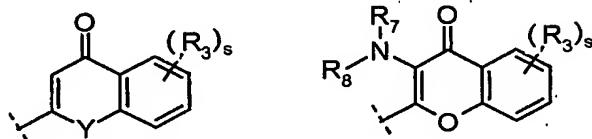
hydrogen,

alkoxy,

halo or

alkyl;

R<sub>2</sub> is:



each R<sub>3</sub> is independently:

hydrogen,

hydroxy,

alkoxy,

SO<sub>2</sub>-alkyl or

iso-propyl;

R<sub>7</sub> and R<sub>8</sub> are each independently:

hydrogen or

alkyl, or

R<sub>7</sub> and R<sub>8</sub> together with the nitrogen to which they are attached form a 6-membered ring optionally containing an additional oxygen atom;

X is CH or N;

Y is N-alkyl or O;

n is 1;

m is 1 - 3;

o is 0 or 1;

p is 0 or 1;

q is 1.

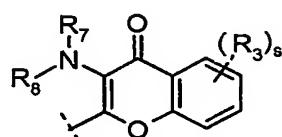
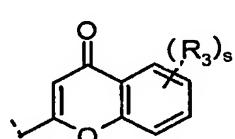
4. The compound of any of claims 1 to 3, wherein

Ar is:

phenyl or naphthyl which may be substituted with halo;

R<sub>1</sub> is hydrogen;

R<sub>2</sub> is:



each R<sub>3</sub> is independently:

hydrogen,

hydroxy,

alkoxy,

SO<sub>2</sub>-alkyl or

iso-propyl;

R<sub>7</sub> and R<sub>8</sub> are each independently:

hydrogen or

alkyl, or

$R_7$  and  $R_8$  together with the nitrogen to which they are attached form a 5- to 6-membered ring optionally containing an additional oxygen atom;

$X$  is CH or N;

$n$  is 1;

$m$  is 1 or 2;

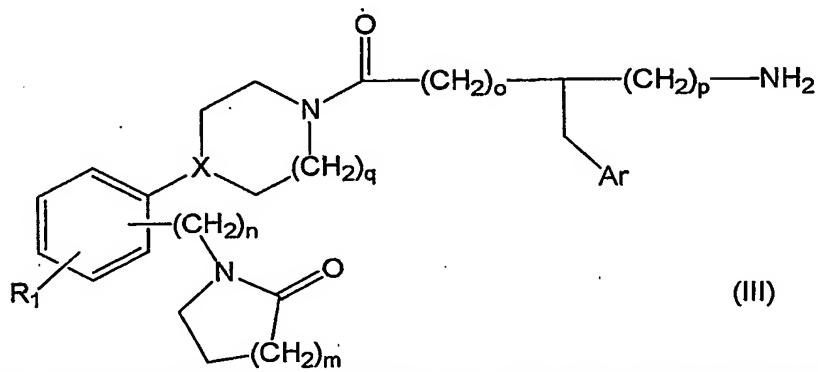
$o$  is 0;

$p$  is 0;

$q$  is 1

$s$  is 1 - 2.

5. The compound of any of claims 1 to 4 for use as a medicament.



6. Use of the compound of any of claims 1 to 4 for the preparation of a medicament for the treatment or prevention of disorders, diseases or conditions responsive to the inactivation or activation of the melanocortin-4 receptor.

7. Use according to claim 5 for the treatment or prevention of cancer cachexia.

8. Use according to claim 5 for the treatment or prevention of muscle wasting.

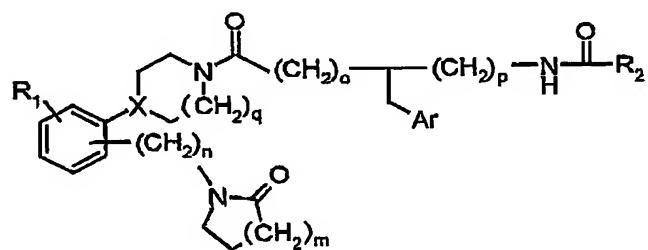
9. Use according to claim 5 for the treatment or prevention of anorexia.
10. Use according to claim 5 for the treatment or prevention of anxiety and/or depression.
11. Use according to claim 5 for the treatment or prevention of obesity.
12. Use according to claim 5 for the treatment or prevention of diabetes mellitus.
13. Use according to claim 5 for the treatment or prevention of male or female sexual dysfunction.
14. Use according to claim 5 for the treatment or prevention of erectile dysfunction.
15. A pharmaceutical composition which comprises a compound of any of claims 1 to 4 and a pharmaceutically acceptable carrier.

**AMENDED CLAIMS**

[received by the International Bureau on 06 August 2004 (06.08.04);  
original claims 1-15 replaced by amended claims 1-15]

**NEW CLAIMS 1 - 15**

1. A compound of structural formula (I):



(I)

or a pharmaceutically acceptable salt or solvate thereof, wherein

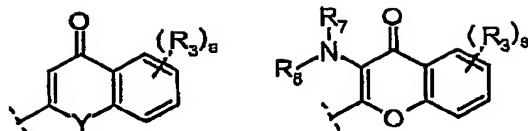
Ar is:

aryl or heteroaryl which may both be substituted or unsubstituted;

R<sub>1</sub> is independently:

- hydrogen,
- hydroxy,
- cyano,
- nitro,
- halo,
- alkyl,
- alkoxy or
- haloalkyl;

$R_2$  is:



each  $R_3$  is independently:

- hydrogen,
- halo,
- alkyl,
- haloalkyl,
- hydroxy,
- alkoxy,
- S-alkyl,
- $SO_2$ -alkyl,
- O-alkenyl,
- S-alkenyl,
- $NR_7C(O)R_7$ ,
- $NR_7SO_2R_7$ ,
- $N(R_7)_2$
- (D)-cycloalkyl,
- (D)-aryl,
- (D)-heteroaryl or
- (D)-heterocyclyl (wherein heterocyclyl excludes a heterocyclyl containing a single nitrogen), and
- wherein aryl, heteroaryl, heterocyclyl, alkyl and/or cycloalkyl may be substituted or unsubstituted, and two adjacent  $R_3$  may form a 4- to 7-membered ring;

$R_7$  and  $R_8$  are each independently:

hydrogen,

alkyl or

cycloalkyl, or

R<sub>7</sub> and R<sub>8</sub> together with the nitrogen to which they are attached form a 5- to 8-membered ring,

wherein alkyl and cycloalkyl are both unsubstituted or substituted;

D is a bond or alkyl;

X is CH or N;

Y is O or NR<sub>7</sub>;

n is 1 - 4;

m is 0 - 3;

o is 0 - 2;

p is 0 - 2;

q is 1 or 2;

s is 0 - 4.

2. The compound of claim 1, wherein

Ar is:

aryl which may be substituted with one to three substituents independently selected from the group consisting of cyano, nitro, perfluoroalkoxy, halo, alkyl, (D)-cycloalkyl, alkoxy and/or haloalkyl;

R<sub>1</sub> is independently:

hydrogen,

hydroxy,

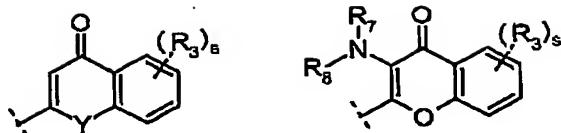
halo,

alkyl,

alkoxy or

haloalkyl;

$R_2$  is:



each  $R_3$  is independently:

- hydrogen,
- halo,
- alkyl,
- haloalkyl,
- hydroxy,
- alkoxy,
- S-alkyl or
- $SO_2$ -alkyl,
- O-alkenyl or
- S-alkenyl;

$R_7$  and  $R_8$  are each independently:

- hydrogen,
  - alkyl or
  - cycloalkyl, or
- $R_7$  and  $R_8$  together with the nitrogen to which they are attached form a 5- to 7-membered ring optionally containing an additional heteroatom selected from O, S and  $NR_4$ ;

D is a bond or  $CH_2$ ;

X is CH or N;

Y is  $NR_7$  or O;

n is 1 or 2;

m is 1 - 3;

o is 0 or 1;

p is 0 or 1;

q is 1;

s is 1 - 3.

3. The compound of claim 1 or 2, wherein

Ar is:

phenyl or naphthyl which may be substituted with one or two substituents independently selected from the group consisting of perfluoroalkoxy, halo, alkyl, alkoxy and haloalkyl;

R<sub>1</sub> is independently:

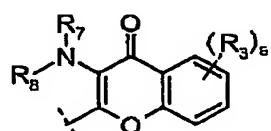
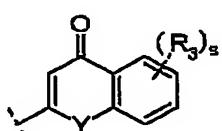
hydrogen,

alkoxy,

halo or

alkyl;

R<sub>2</sub> is:



each R<sub>3</sub> is independently:

hydrogen,

hydroxy,

alkoxy,

SO<sub>2</sub>-alkyl or

iso-propyl;

$R_7$  and  $R_8$  are each independently:

hydrogen or

alkyl, or

$R_7$  and  $R_8$  together with the nitrogen to which they are attached form a 6-membered ring optionally containing an additional oxygen atom;

$X$  is CH or N;

$Y$  is N-alkyl or O;

$n$  is 1;

$m$  is 1 - 3;

$o$  is 0 or 1;

$p$  is 0 or 1;

$q$  is 1.

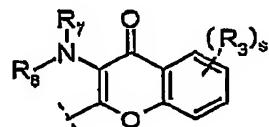
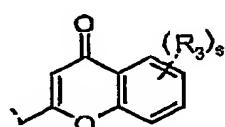
4. The compound of any of claims 1 to 3, wherein

Ar is:

phenyl or naphthyl which may be substituted with halo;

$R_1$  is hydrogen;

$R_2$  is:



each  $R_3$  is independently:

hydrogen,

hydroxy,

alkoxy,

$\text{SO}_2$ -alkyl or

Iso-propyl;

R<sub>7</sub> and R<sub>8</sub> are each independently:

hydrogen or

alkyl, or

R<sub>7</sub> and R<sub>8</sub> together with the nitrogen to which they are attached form a 5- to 6-membered ring optionally containing an additional oxygen atom;

X is CH or N;

n is 1;

m is 1 or 2;

o is 0;

p is 0;

q is 1

s is 1 - 2.

5. The compound of any of claims 1 to 4 for use as a medicament.
6. Use of the compound of any of claims 1 to 4 for the preparation of a medicament for the treatment or prevention of disorders, diseases or conditions responsive to the modulation of the melanocortin-4 receptor in a mammal, where modulation means activation in the case of MC4-R agonists or inactivation in the case of MC4-R antagonists.
7. Use of MC4-R antagonists according to claims 6 for the preparation of a medicament for the treatment or prevention of cancer cachexia.
8. Use of MC4-R antagonists according to claims 6 for the preparation of a medicament for the treatment or prevention of muscle wasting.

9. Use of MC4-R antagonists according to claims 6 for the preparation of a medicament for the treatment or prevention of anorexia.
10. Use of MC4-R antagonists according to claims 6 for the preparation of a medicament for the treatment or prevention of anxiety and/or depression.
11. Use of MC4-R agonists according to claims 6 for the preparation of a medicament for the treatment or prevention of obesity.
12. Use of MC4-R agonists according to claims 6 for the preparation of a medicament for the treatment or prevention of diabetes mellitus.
13. Use of MC4-R agonists according to claims 6 for the preparation of a medicament for the treatment or prevention of male or female sexual dysfunction.
14. Use of MC4-R agonists according to claims 6 for the preparation of a medicament for the treatment or prevention of erectile dysfunction.
15. A pharmaceutical composition which comprises a compound of any of claims 1 to 4 and a pharmaceutically acceptable carrier.